

MATH 0304**PRACTICE FINAL EXAM**

1. **Solve:** $4(2x + 3) + x = 3(x - 3)$

2. **Translate the words into an algebraic equation, then solve the equation:**
Three times the difference of a number and seven is one less than twice the number. Find the number.

Solve the inequalities and write the solutions in interval notation:
3. $-4x + 14 < 7x - 30$ 4. $8 \leq x - 3 \leq 10$

5. Graph the line $y = \frac{1}{3}x + 2$. Label at least two points (with their coordinates) on the line.
6. Find the slope of the line passing through the points (4, -2) and (6, 8)

7. A given line has a slope of $-\frac{7}{5}$.
 - a. What is the slope of a line parallel to the given line?
 - b. What is the slope of the line perpendicular to the given line?
8. Find the x- and the y- intercepts and express answer as ordered pairs:
 $2x - 4y = -8$

9. Write an equation of the line whose slope is $-\frac{1}{4}$ and whose y-intercept is (0,3). Express equation in slope-intercept form.

Problems 10 – 12: Perform the indicated operations.

10. $(10x^2 + 7x - 3) + (-4x^2 + 2x - 7)$

11. $(3x - 2)(x + 2)$

12. $(7x + 1)^2$

13. Simplify the expression: $\left(\frac{x}{y^3}\right)^{-2}$

Problems 14 – 17: Completely factor each polynomial.

14. $x^2 - 4x - 12$

15. $12x^2 + 17x + 6$

16. $5x^2 - 20$

17. $4x^2 + 20x + 25$

18. Simplify: $\frac{y^2-5y}{7y-35}$

19. Subtract: $\frac{x+2}{x+3} - \frac{7}{x+3}$

20. Solve. $\frac{4y}{y-4} + 5 = \frac{5y}{y-4}$

21. Solve for x. $|3x - 1| - 5 = 3$

In problems 22 and 23, simplify each expression. Assume that all variables represent positive real numbers. Add or subtract like terms where indicated.

22. $\sqrt{49x^6y^{16}}$

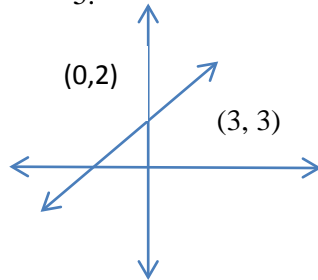
23. $\sqrt{20} - \sqrt{45}$

24. Perform the indicated operation. Give answer in a + bi form:
 $(5 - 3i) - (4 + 2i)$

25. Solve using the quadratic formula. Leave answer in simple radical form:
 $x^2 - 6x + 6 = 0$

Answers to Practice Final Exam

1. $x = \frac{-7}{2}$
2. $x = 20$
3. $x > 4; (4, \infty)$
4. $11 \leq x \leq 13; [11, 13]$
- 5.



6. $m = 5$
7. a. $m = \frac{-7}{5}$; b. $m = \frac{5}{7}$
8. x-intercept: $(-4, 0)$ & y-intercept: $(0, 2)$
9. $y = \frac{1}{4}x + 3$
10. $6x^2 + 9x - 10$
11. $3x^2 + 4x - 4$
12. $49x^2 + 14x + 1$
13. $\frac{y^6}{x^2}$
14. $(x - 6)(x + 2)$
15. $(3x + 2)(4x + 3)$
16. $5(x + 2)(x - 2)$
17. $(2x + 5)^2$
18. $\frac{y}{7}$
19. $\frac{x-5}{x+3}$
20. $y = 5$
21. $x = 3$; $x = \frac{-7}{3}$
22. $7x^3y^8$
23. $-\sqrt{5}$
24. $1 - 5i$
25. $3 \pm \sqrt{3}$